on oncogenic viruses (1) and on circovirus infections (2) elaborating on human infections with similar virus-families.

1. Davidson,I. & Silva,R.F. (2008). V*irus Genes* 36: 1-10.
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Methods: Molecular integration were assessed by the detection of chimeric molecules in vivo.

Results: Avian tumor viruses include one herpes- and four retroviruses. Molecular recombination between DNA and retroviruses was created in vitro, resulting in an recombinant MDV with altered properties (Drs. Kung and Witter, USA). We now questioned multiple-virus-infections in commercial flocks, examining whether interviral molecular recombinations occur also in vivo, and found 25% double-virusinfected commercial flocks and 5% samples with molecular integrations. Spontaneous interviral recombination occurred also between retroviruses in commercial birds, emerging in the avian leukosis-subgroup-J, that caused great economic losses. Avian tumor viruses could provide animal models to human dual infections with herpesviruses and retroviruses. We also reviewed similarities between human Anellovirus and avian *Circoviridae*, to examine whether knowledge acquired from studies of natural and experimental avian infections with could reflect on human Anelloviruses.

Conclusion: Studies on avian circoviruses, specifically chicken anemia virus (CAV) can add to current understandings on Anellovirus infections, directed towards finding associated diseases. The health burden imposed by *Circoviridae* and Anellovirus infections may be underestimated because lack of awareness for search beyond the predominant clinical effects of identified pathogens. Their immunomodulatory contribution by co-infecting *Circoviridae* and, by analogy, human Anelloviruses necessitates consideration.

doi:10.1016/j.ijid.2010.02.637

84.007

Optimization of IgG-ELISA and molecular analysis of Reston-ebolavirus among swine in Northern Luzon, the Philippines

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Background: In late 2008, Reston-ebolavirus (RES) in swine was first reported in the world from 2 provinces in the Philippines, and those were also affected with Porcine Respiratory and Reproductive Syndrome (PRRS). The aims of this study are 1) to establish the detection of anti RES IgG by ELISA and 2) to analyze the extent of transmission and spread of RES in swine in the affected farm.

Methods: Two RES outbreaks, which were first reported, were examined in this study.1) From the lymph node of RES infected swine, RES-Nucleoprotein (RES-NP) and RES-Glycoprotein (RES-GP) gene were amplified and nucleotide sequences were determined. 2) RES-NP and GP were expressed in insect cells by *recombinant baculovirus* and then purified. IgG-ELISA was compared with different antigens: purified recombinant RES-NP and GP purified recombinant Zaire Ebola (ZAI)-NP, RES-infected cell antigens (authentic-RES, prepared by US-CDC), ZAI-infected cell antigens (authentic-ZAI, prepared by US-CDC). Immunofluorescent (IF) test using Hela cells expressing the recombinant RES-NP, GP and ZAI-NP were also conducted.

Results: 1) Multiple mutations were detected in *variable region* of GP, compared with the RES from the monkeys in 1989, 1992 and 1996. 2) IgG-ELISA using purified recombinant RES-NP, GP and authentic RES showed the highest sensitivity, followed by ZAI-infected cells and lowest with purified recombinant ZAI-NP. The serum samples being positive in IgGELISA with RES-NP and GP were confirmed as such in IF test. Approximately 20% of the swine serum from Bulacan Province showed positive.

Conclusion: It is still unclear if RES is pathogenic in swine and how PRRS is involved in infection and spread of RES among swine. Further seroepidemiological survey in swine in other farms is still necessary to reveal the actual situation of RES in the Philippines. RES antibody detection system will be very useful in augmenting the RES detection systems currently available in the Philippines.

doi:10.1016/j.ijid.2010.02.638

84.008

A newly discovered viral enzyme capable of alteration of nucleic acid structure via phosphotriester and phosphodiester bonding complex: An event leading to a new frontier of research and development for viral diseases

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Background: Viruses are interested because many cause serious illness in humans, animals, and damage crop plants. During the last century, progess in the control of infectious disease through using new vaccines and drugs have reduced the threat to human. The advance of new knowledge/ technology relevant to viruses provide a better way to control viral diseases. We report a newly discovered virus associated enzyme capable of altering nucleic acid structure through the formation of phospho-triester/phosphdiester bonding.

Methods: Enzyme was partially purified from plant/animal sources by combining (NH4)2SO4 Fractionation, Gel Filtration, Ion Exchange Chromatography. Virions were gifts from laboratories of the following professors: Roland Rueckert (polivirus and influenza virus); Paul Ahlquist (Brome mosaic virus), Molecular Institute of Virology; Thomas German (Southern Bean mosaic virus), Department of Entomology; Virginia Hindshaw (avian virus),and Mouse retrovirus from the late Prof. Howard Temin, UW; and Univeristy of Laval, Canada, respectively. The phospho-bonding complexes were determined